Information technologies and transitions in the lives of 55–65-year-olds: the case of colliding life interests

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Abstract

More and more people entering the stage of retirement at around age 55–65 are healthy, active, and also very computer-literate. This trend is rapidly changing the common image of late-midlife technology users, which rests on the assumption that they find it difficult to embrace new technologies and also that their main interests are health-related. Although technology use and lifestyles are changing, however, many other aspects of life remain the same. One of these aspects is that of the *transitions*, or life changes, that generally take place in these years. Besides retirement, these transitions include changes in health, housing, social interaction, work life, and personal finance. People develop different ways of coping with these transitions, which brings up interesting issues related to the late midlife stage. This paper presents a diary-aided interview study of late middle-age adults (N=24) in Finland and Sweden with a focus on the interplay between technologies and transitions. Transitions were found to play a part in how the life interests of late middle-aged persons are often conflictive, forcing them to choose from among various 'possible selves'. At its best, technology can help alleviate these tensions. This finding is exemplified in the paper's discussion of two design implications associated with particular clashes of interests, related to how daily activities are organized and how contact is maintained with one's friends and family.

Keywords

Late middle age, later midlife, colliding life interests, transitions, life changes, coping strategies

1 Introduction

The increasing number of elderly people in the developed countries has sparked a growing interest in the study of accessible, inclusive, and universally usable computing systems. For instance, the World Wide Web Consortium (W3C) has developed guidelines for accessible web page design[1], thus struggling against the tendency to design systems mainly for computer-literate teens and young adults

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[1] See the W3C's Web Accessibility Initiative (WAI) at http://www.w3.org/WAI/ (last accessed on 17 December 2009).

in their twenties and thirties. With the aim of creating an inclusive information society, efforts have been made to address other age groups as well, such as *elderly* or *senior* citizen computer-users—people aged 65 and older—mainly focusing on the problems arising from weakening sensorimotor and cognitive skills (e.g., Czaja and Lee, 2008) and to various assistive technologies (Cheek et al., 2005; Hirsch et al., 2000; Miskelly, 2001).

However, less research has been directed at understanding the information technology needs of the people in *late middle age* or *late midlife* (Haddon, 2004), that is, those around 55–65 years of age. This age group shares characteristics that make it quite interesting for more detailed research. In particular, these characteristics are related to life changes that are common among that age group. Retirement is one of the most important changes, and has repercussions on one's time use, financial situation and social networks. Life changes in one's social relationships—regarding the health or contact with one's partner, parents, children or work colleagues—may lead to changes in people's priorities and values. The parents of the late middle-agers tend to have deteriorating health or may have already passed away, and their children are probably starting their own families, turning late middle-aged people into grand-parents. Housing and living can also be changing, especially due to retirement and thus having the possibility to organize one's life around non-work related issues. The research presented in this paper has been motivated by our expectation that these kinds of changes lead to increased and new ways of information seeking and communication. We have expected that people set out to plan and reorganize their lives, orient themselves to new interests, and stay in touch with other people in different ways than before. Here information and communications technologies play an important role.

The main aim of this paper is to provide starting points for understanding the life context of people around the age of 55–65. In this work, the focus is not so much on the various age-linked issues related to computer use as on life situations and important *life transitions*—or life changes—that are taking place. This means emphasizing the life changes mentioned above, people's thoughts about them, and their connections to social and economic issues. In particular, the paper addresses three research questions: 1) what life transitions (if any) are late middle-aged people experiencing in their lives, 2) what patterns of technology use are commonplace among late middle-aged people, and as a result of this understanding, 3) what role could technology play in helping them cope with such transitions?

The findings, analyzed from a qualitative study with 24 late middle-age participants in Finland and Sweden indicate that transitions influence the participants' lives in significant ways. They have various ways of coping with these transitions, and in some cases coping becomes difficult because of colliding life interests. Examples of colliding life interests are the desire to spend time with one's social network while at the same time dreaming of long trips or moving to the countryside. These interests collide with one another, because they cannot be maintained at the same time.

On a more general level, we link the findings to a contemporary trend towards living via individualized networks. This means that late middle-aged people are also sending and receiving more information with their own mobile phones, e-mail accounts and other personal media technologies that are not shared in the way that domestic landline telephones, for instance, used to be. This trend gives people various ways to cope with transitions.

We maintain that information and communication technologies (ICTs) are one of the key facilitators of this trend, through their increasingly critical role in helping people to live successfully as active citizens, maintaining spatially-distributed social relationships, and accomplishing everyday tasks. ICTs are well-known to an increasing number of people in this age group and play an important part in their transitions. Socioeconomic factors still constrain the use of ICTs as well as the trend towards individualized networks.

Regarding the design implications, we focus especially on colliding interests that may be alleviated with active behavioral coping strategies. By uncovering the colliding interests that may lead to problems in different life areas, and the role of information technology in them, the paper both highlights the need to consider late middle-agers as individuals in various networks and explores the implications for the design of possible future services that alleviate those conflicts.

1.1 Late midlife: a profile provided by statistics

The developed world is currently experiencing a dramatic demographic shift toward elderly residents. As the largest cohorts of their population are entering the retirement stage and people live longer, substantial socioeconomic changes are taking place, for example, in the U.S. and Europe. Figure 1 shows the age pyramids projected for 2010. As can be seen, although in 2010 the 55–65-year-olds do not yet constitute the largest cohort in the population, a rapid shift is currently taking place in this direction.
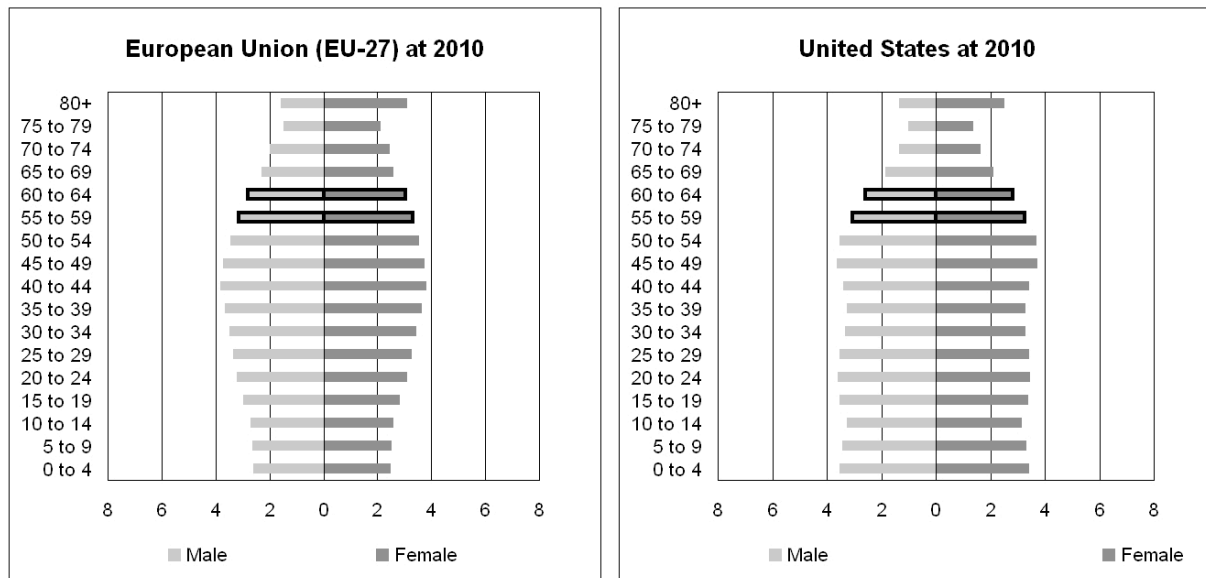

Figure 1. Projected age pyramids for 2010 from the United States and the EU-27 (the 27 countries currently in the European Union). Sources: U.S. Census Bureau (2005c), Eurostat (2008a, p. 29).

Retirement is one of the biggest changes among people aged 55 to 65. The average age of exit from the labor market for men and women in the U.S. in 2000–2005 was 61.6 and 60.5 years, respectively (Gendell, 2008). In the EU-27 countries, the corresponding ages were 61.7 and 60.7 in 2006, respectively (Eurostat, 2009a). Having had long careers in working life, many people in late middle age have put away money to spend during this stage of life. In terms of an individual's net worth, the 55–65 and 65–69 age groups are the wealthiest of all the age cohorts in the U.S., even when considering assets that can be liquidized easily (U.S. Census Bureau, 2008 and 2009). As retirement nears, one's children tend to stand on their own and are no longer financially dependent on their parents. As a result, many people in late middle age have more money to spend than at any other stage in their life thus far (see Gottschalck, 2008, p. 5). This situation and the increased free time create the possibility for a new life stage in which people are commonly referred to as 'senior citizens.'

One misconception to be refuted about 55–65-year-old people is that their health is continuously deteriorating and that they are facing severe age-related difficulties. In fact, while health issues become increasingly apparent at this age, most of the people in late middle age are, generally speaking, in good physical and mental health. In the U.S. in 2002, the percentage of the population aged 55–64 who suffer from a disability (e.g. the hearing or visually impaired) was 28.1%. A total of 19.3% had a severe disability (e.g., used crutches or other aids) and 5.4% needed assistance in one or more daily activities (Steinmetz, 2006, p. 4). That is, people aged 55 to 64 generally do not suffer from any disability. In Europe, Eurostat calculates an indicator called the healthy life year (HLY), which measures the number of years that a person is expected to remain alive and healthy. In 2003, European women could be expected to live 66.0 years and men 64.5 years old without disabilities or limitations in their functioning (Eurostat, 2010a). A comparison with the U.S. is not possible, because the latest U.S. HLY statistics are from 1996 (Manton and Land, 2000).

Another misconception concerns ICT skills of people in late middle age. The IT revolution in workplaces is dramatically changing the ICT usage skill levels of people in late midlife. Table 1 shows that the majority of late middle-agers in developed countries are already proficient in the use of Web browsers, e-mail, and cellular phones. The percentages are likely to increase alongside further improvements in digital services, and retirement of more and more technologically literate people.

Table 1: Demographic data on ICT use in some areas among people around 55–65 years of age [a]—for cells marked with a dash (-), a suitable percentage could not be found (sources: Eurostat (2009b; 2010b; 2010c), MIC (2006), Rogers and Ryan (2007), US Census Bureau (2005a, 2005b))

Percentage of 55−65-year-olds who…	USA (2003)	EU-15 average (2007)	Sweden (EU) (2007)	Finland (EU) (2007)	Japan (2005)
…use the Internet at home or elsewhere	55.7%	37% (at home)	62% (at home)	51% (at home)	42.0% (55–69 years)
…use e-mail	49.2% (88.3% of those who use the Internet)	36%	56%	50%	-
…use the Internet to purchase products or services	26.6% (54.1% of those who use the Internet)	13% (2005)	24% (2005)	13% (2005)	-
…have a cell phone	67.2%	78.8%	90.6%	95.8%	80.9% (50−59-year-olds) 69.3% (60−64-year-olds)

[a] Obtaining two of the percentage figures for the USA required performing an extra multiplication; because of this, the original information provided by the U.S. Census Bureau is also given, in parentheses.

To summarize the picture provided by statistics, late middle-aged people represent a growing cohort of rather wealthy individuals in good physical and mental health who are about to leave the labor market. They can be increasingly regarded as a group that is familiar with the major ICTs.

2 Related research

The statistical profile of the people in late middle age can be fleshed out by reviewing literature about different life areas. This will be done below, with a focus on different transitions that are common at around 55–65 years of age. Because comprehensive literature reviews of people aged 55–65 are rare in HCI literature, the aim is also to gather a corpus of publications and make them useful for other researchers. Partly because of the availability of publications, and partly because of the empirical

research context of this paper (i.e. the focus on the Nordic countries), the findings are dominated by studies carried out in developed countries. Readers interested in a more heterogeneous and cross-cultural perspective can look at the work of Luborsky and LeBlanc (2004) as a starting point.

2.1 Life transitions

Life transitions do not happen only to specific age cohorts but are a constant driver for change in individuals' lives. Life-cycle events such as the birth, graduation, marriage, and death of one's peers change people's lives. This means that at any point in a person's life, previously made plans and interests may collide with changes brought by transitions. In his discussion on retirement in American society, Moen accurately summarizes the common transitions in late midlife and their importance:

> For many Americans, the midcourse years are a progression of moving from planning and talking about retirement possibilities to exiting one's primary career job, moving into unpaid volunteer work or a second or third (paid) career, caring for aging or infirm relatives, becoming eligible for Social Security and Medicare, developing concerns about one's health, and, finally, leaving the workforce altogether. All these changes occur in tandem with witnessing one's children grow up, marry or not, start families or not, become economically self-sufficient or not. Simultaneously, one's spouse, friends, and colleagues begin to think about and actually retire from their own career jobs, developing alternative lifestyles for the midcourse years (Moen, 2003, p. 270).

When talking about 'midcourse', Moen refers to the years spanning from one's fifties to one's seventies, depending on the person (p. 270). Although his focus is on transitions in American life, this is a list of life changes that are common in many other countries as well. To this initial list, other commonly known transitions can be added: the loss of contact with work colleagues and increased free time, both due to retirement, as well as the passing away of one's parents, becoming a grandparent, and the 'empty nest' transition when children move away from their childhood home. These are transitions that came up in the study presented later in this paper.

In counseling psychology and family therapy research, transitions are often understood as staged processes. This line of research approaches transitions as potentially problematic life events that people have to find ways to cope with (see the work of, e.g., McGoldrick and Carter, 1982). For instance, Hopson (1981) describes a transition as a process that starts with an entry experience of confusion and emotional discomfort, and leads through a brief period of sadness or despair to stabilized moods. Along the same lines as Hopson, Brammer (1992) discusses various *coping strategies* for managing loss experiences and presents different staged recovery processes that counselors and their clients can use when conceptualizing what is happening during intensive life changes. The connection to coping strategies is revisited in the 'Discussion' section of this paper (see Subsection 5.2).

Researchers from more sociologically oriented fields have contested the idea of transitions as difficult life experiences in all cases, especially when they are self-initiated. Transitions are seen as changes in one's status that are discrete and temporally bounded while usually having long-term consequences. They refer to relatively short views of the life course, and one of the bigger life changes may involve multiple transitions (George, 1993). It is this social research that will be reviewed in more detail below, with a focus on the kinds of transitions that are common in late midlife. Because most of the research has been quantitative and this paper is mainly based on a qualitative analysis of interviews, particular emphasis is placed on the few qualitative studies carried out in this field thus far.

2.1.1 Retirement

Retirement is a good example of a profound transition that can take place either voluntarily or involuntarily and which has effects on many aspects of a person's life. Rather than being necessarily abrupt, retirement can take place gradually—for instance, when someone retires but engages in volunteer work, gets a new (often part-time) paid job, or adopts an active family role (for example, as a caregiver to one's spouse or parents) (see Moen et al., 2000, pp. 84–88).

According to a survey by Wolcott (1998), the decision to retire is affected by many elements such as one's occupational situation and job satisfaction, the desire to spend time differently, one's financial situation, the retirement decisions of one's partner, and health aspects. Causes for retirement are both voluntary and involuntary, including one's own health or that of a partner as the most important factor; the next factors are the desire to do other things and reaching a certain age. In Wolcott's study, the majority of respondents found the retirement process easy to manage. In post-retirement life, contacts with family (children and grandchildren) as well as friends proved important.

Retirement may force people to reformulate their social identities and roles. Luborsky (1994) has presented this as three intertwined reformulation phases: the termination of a career job, a 1–2 month 'limbo' period, and a reorganization process. Recently retired people may engage in various project-like activities such as backyard gardening that help them build new identities as persons who, despite being retired, are still physically and mentally capable of challenging endeavors. Such projects initiate the reorganization process that helps people to redefine their identities and roles.

Engaging in personal projects is a sign of an active attitude that helps people to overcome retirement-related difficulties. According to demographic research on retirement and life in the 'third age', developing a personally satisfying lifestyle cannot be attributed to working life satisfaction alone (Laslett, 1989) or factors such as high education, income, social and material security, or the amount of free time outside one's work (Gilleard and Higgs, 2002). Price (2003) has presented four strategies that people can engage in to cope with loss of a professional role: the expansion of one's social role to new areas, getting to know oneself better, managing the use of time in a structured way, and becoming active in the community. Kloep and Hendry (2001) studied the attitudes that underlie the decisions to commit to such strategies. They found three categories: "there is life beyond work", "work as a life-style", and "there is not much left to live for." If a person can entertain multiple "possible selves" (p. 589)—that is, multiple conceptions of what one wants to be like in the future—this helps keep him or her from adopting a negative attitude towards retirement.

2.1.2 Social relationships

In late midlife, the structure and the nature of social relationships can change significantly, which may redefine the social roles in a person's network completely. It has been noted that, because of such changes, relationships also become more varied in late middle age, with an increasing number of shorter long-term marriages, even among older people who had never been married before (Cooney and Dunne, 2001).

Retirement brings about an abrupt loss of contact with many people that a person may have known quite well over a long period. In the study by Moen et al. (2000), losing contact with coworkers was cited as the main disadvantage of retirement by 72% of retired people (p. 82). The changes in a person's other social networks can be drastic as well. Most people at this age already know someone who has fallen seriously ill or even died. Engaging in active (formal or informal) caregiving is another example of a big shift in one's social role and has also financial consequences (Johnson and Lo Sasso, 2000). Often this requires finding a 'balance point' between personal needs and the caregiving responsibilities (Shyu, 2000).

In other cases, transitions are not as dramatic or negative. Relationships to friends, relatives, and other important persons can endure for a long time. If the person has children, their leaving home changes the family relationships and home life considerably, as do the events when an adult child begins to live with another person, gets married, and has children (Aquilino, 1997).

2.1.3 Housing and living

The transitions in late midlife also provide opportunities and the need to move to another area or at least to move to a different apartment or house. Many characteristics are correlated with housing expectations. Deteriorating health appears to have some effect on moving decisions. Most people expect to age where they are as opposed to planning to move to supportive environments. People who rent are less attached to their neighborhoods and therefore are more likely to foresee a move in their

future (Robison and Moen, 2000). Three types of moves are common in this life stage: moving closer to amenities; a move due to moderate disability levels; and a move due to a major, chronic disability that usually results in institutionalization (Litwak and Longino, 1987). Silverstein (1995) has supplemented this model by taking into consideration the move of adult children from the household. When people in this age move, they often choose a smaller dwelling (Banks et al., 2006).

2.1.4 Coping with transitions

As defined earlier, life transitions can be experienced as both positive and negative. Depending on how life changes are experienced and defined, whether they are voluntary or involuntary, the methods of getting through them vary and can vary among different people. In this paper, we are especially interested in *coping*, which is viewed in the psychological literature as a form of self-initiated problem-solving (Brammer, 1992), clearly distinguishable from adjustment or psychological defense, both of which are automatic reactions to changes and threats. Hence, coping strategies refer to specific behavioral and psychological efforts that people employ to manage events. Lazarus and Launier (1978) define coping as "efforts, both action oriented and intra psychic, to manage (i.e. master, tolerate, reduce and minimize) environmental and internal demands and conflicts," (p. 311). Their definition is comprehensive in that it addresses the cognitive, affective (attitude), and behavioral (skill) aspects of the coping process.

Brammer (1992) categorizes coping strategies as follows: building and utilizing support networks; cognitive restructuring or reframing; solving problems in the rational, intuitive, discovery, and systems modes, and managing stress responses and stress-inducing events. Building a life narrative can also be seen as a coping strategy, since the narrative reconstruction of one's life is especially important in radical situations where the frames of life that were taken for granted collapse. By giving one's life a narrative form, a person can organize his or her experiences by interpreting them through different events in the course of life (Hänninen, 1990). The basic dimension of coping is the person's view of the degree of control over the transition. Seeing a transition as a challenging opportunity—even a welcomed opportunity for creative growth—is an effective and active attitude for getting through the transition (Kobassa, 1979).

Folkman and Lazarus (1980) have studied the ways middle-aged people cope with the ordinary stressful events of their day-to-day lives. They found that both defensive and active functions oriented towards problem solving were usually involved and that people applied different strategies at different times. However, people tended to favor problem-focused coping in work contexts and emotion-focused coping in health contexts. In addition, situations that must be accepted favor emotion-focused coping, whereas situations in which something constructive is possible or where more information is needed favor problem-focused coping.

2.2 Technology use and HCI

Apart from statistics (such as the ones shown in Subsection 1.1), not much information is available about how people aged 55–65 use computers and other technologies in their everyday life. This is because most of the research on the use of ICT by the elderly has been focused on older age cohorts. Many of those papers focus on the deteriorating motor, sensory, and cognitive skills and how they relate to the abilities to use computers efficiently (e.g., Charness and Jastrzembski, 2009; Czaja and Lee, 2008; Freese et al., 2006). Some researchers have also reviewed the research within a given sub-domain of HCI, such as web design (Redish and Chisnell, 2004; Curran et al., 2007), mobile application design requirements (Pattison and Stedmon, 2006), eldercare (e.g., Hirsch et al., 2000), technologies supporting aging in place (Cheek et al., 2005; Mynatt et al., 2000), and the teaching of IT skills (Cahoon, 1998; Morrell et al., 2000). These and other age-related topics have been dealt with extensively in the universal access and inclusive design research communities. However, those studies cannot be uniformly applied to design for 55–65 year olds but are relevant only for a subset of users in that age range.

General overviews of the use of technology by late middle agers can be found in a paper by Charness and Holley (2004) and in a report prepared for a White House Conference on Aging (OTPCDTA,

2005). Charness and Holley start by presenting information about the common age-related cognitive disabilities; they go on to discuss how such factors influence the use of new media technologies such as chat and e-mail. The other paper, in turn, discusses the possible technology needs (related to lifestyle, health care, and communications) that may emerge as the so-called 'baby boomers' reach retirement age. Both papers contend that "tomorrow's seniors are likely to be avid users to the extent that new media do not overly tax their waning capabilities," (Charness and Holley, 2004, pp. 428–429).

While studies focusing on age-related difficulties cannot provide a full picture in attempts to understand the life of technology users aged 55–65, studies on technology attitudes are less age-specific. Older users are willing to learn new technologies if they already possess some experience of their use. Those older users who have deliberately given up on using ICT often refer to bad experiences in the past that have produced feelings of alienation, lack of agency and anxiety (Turner et al., 2007). Training and continued support appear to be important factors in terms of encouraging positive attitudes towards ICT use (Hernández-Encuentra et al., 2009). Many authors have reported that older users are motivated to learn to use ICTs as long as there is utility or a clear benefit to such use (Aula, 2005; Rogers et al., 1998; Selwyn, 2003, 2004).

Regarding communication technologies and the maintaining of social relationships, a review of gerontological research by Lindley et al. (2008) has emphasized the importance of technology in supporting an older person's sense of autonomy, dignity, and freedom to renegotiate one's roles and responsibilities. In particular, older users seemed more interested in maintaining a few close relationships than a large social network. In a later study (Lindley et al., 2009), the same authors have reflected on the findings of the review in light of a series of focus group sessions, with one group consisting of 55–64 year olds. They mention that many participants expressed that lightweight, always-on presence applications do not respond to the need for thoughtfulness and reflection that the users of this age group have learned to associate with satisfying personal communication. Instead of lightness, communication technologies were valued when they provided intensive and easy ways to communicate. Because of this, e-mail and telephone calls were perceived as the preferred forms of mediated contact. A similar result has been presented in a focus group interview study by Dickinson and Hill (2007). However, the studies cited above have focused either on elderly users at large or only on the oldest individuals. While the findings also seem to apply for the 'younger old' segment, there is no detailed information on the possible differences between the segments.

Studies on the actual use of technology provide more concrete findings. Godfrey and Johnson (2009) studied the use of ICT among older users and found that three contexts were of particular importance: life transitions (e.g., moving to a new home), transient life events (e.g., catching a cold), and managing 'daily hassles' (that is, tasks that one has to carry out in a different way because of increasing disabilities or new kinds of technology). In coping with these situations, 'circles of support'—the technology-literate people in one's local community—appear to be crucial. The authors suggest that more work should be carried out to make such circles more easily available to late middle-age users—a task in which ICT can also play an important role. Regarding ethnographically informed field trials involving novel systems, the goals have been less associated with understanding ICT use in general and more focused on specific solutions and possibilities in particular social contexts. The studies have often been longitudinal and covered an extended family that lives in different locations. Most of these studies have presented technologies for facilitating communication within homes or between family members of different generations. These have included digital picture frames (Rowan and Mynatt, 2005), shared family calendars (Plaisant et al., 2006), and information displays that support care for one's elderly parents (e.g., for an 80-year-old) (Consolvo et al., 2004). Alternatively, a 55–65 year old couple may have been provided with an entertaining tool to keep abreast of the lives of their adult children (Keller et al., 2004). One finding indicates that the challenge when designing such systems is related to carefully balancing privacy and shared awareness while providing interactions without obligations (see Tee et al., 2009).

Given the issues listed at the beginning of this review—the major changes in social networks, income, lifestyle, and health—and the scarcity of findings on this particular age group, more research on the

role of ICTs in this context is necessary. The study described below, carried out in two European countries—Finland and Sweden—with a qualitative approach, shows some of the salient characteristics of the age group. Our findings confirm the importance of taking transitions into account as important life changes, and point towards colliding life interests as a design space for ICTs.

3. Method

The three research questions presented in the introduction to this paper (technology use patterns, the nature of transitions, and the role of technology in the transitions) are open-ended questions that call for a data-driven, qualitative research method. To implement such a method, the study was based on interviews that were supplemented with diary-keeping and sociogram-drawing tasks. The study was carried out in spring 2007.

The participants (N=24, age range 55 to 70) in the study were from Sweden (N=13) and Finland (N=11). They were found in different ways: through a professional recruiting agency (7 in Finland, 11 in Sweden), by making use of the researchers' social networks (1 in Finland, 2 in Sweden), and by joining forces with other ongoing research projects (3 in Finland, none in Sweden). Table 2 provides a summary of the general characteristics of participants. Both genders were well represented in both countries. The participants also represented different life situations occupationally, maritally, and economically. The average age of 61.2 meant that most of the people interviewed had already experienced and gotten through many of the classes of transitions addressed above. Three members of our sample (aged 67, 69, and 70 years) fell outside the target age group but were included because their experiences of retirement and of the whole period of age 55–65 provided unique experiences for the study. Although we made an effort to find different kinds of participants from the age cohort, the results are not generalizable to the whole age group. We focused instead on qualitative insights concerning the practices and concerns regarding life transitions and ICT use. Because of the qualitative approach and sample size, we did not attempt to investigate correlations between transitions and statistical data such as income.

Table 2: Characteristics of the people studied

Country	N	Age	Occupational status	Relationship status
Finland	Male: 6	Mean: 61.0 (SD 5.8)	Retired: 5	Married: 4
			Working full-time: 1	Living alone: 2
	Female: 5	Mean: 59.6 (SD 5.1)	Retired: 3	Married: 4
			Working full-time: 2	Living alone but in a relationship: 1
Sweden	Male: 6	Mean: 63.2 (SD 2.5)	Retired: 3	Married: 6
			Working full-time: 3	
	Female: 7	Mean: 62.4 (SD 3.2)	Retired: 1	Married: 6
			Working full-time: 5	Living alone: 1
			Working part-time: 1	
Altogether	Male: 12	Mean: 61.7	Retired: 12	Married: 20
	Female: 12	SD: 4.2	Working full-time: 11	Living alone: 3
			Working part-time: 1	Living alone but in a relationship: 1

3.1 Data collection

Three data collection methods were used in the study: self-administered diaries that focused on participants' information technology use patterns, sociograms of the participant's social networks, and thematic interviews about life changes and transitions. Each participant came to two meetings. In the first meeting, they were given an empty diary and a sheet with a sociogram. The second meeting took place about a week later. It was longer as it involved collecting the completed diary and the sociogram, followed by the full interview.

3.1.1 Diary

The purpose of the diary was to gather concrete information on the current and possible future practices in the 55+ age group in terms of 1) keeping in touch with other people (both at work and in leisure time); 2) arranging practical matters, such as ordering tickets or paying bills; 3) finding information on matters of interest; and 4) using electronic media.

To collect the data for this, participants were asked to keep a diary of their information technology use for one week. For each event of interest, they were asked to write down the time of the day, the purpose of use, and the use context. Later, this information was used in an interview for posing specific questions regarding that week. Figure 2 shows an example of a completed page that was collected from one Finnish participant. The diary proved helpful in two ways: it provided concrete data about use practices and also showed whether the participants communicated in different ways with people from different social circles.
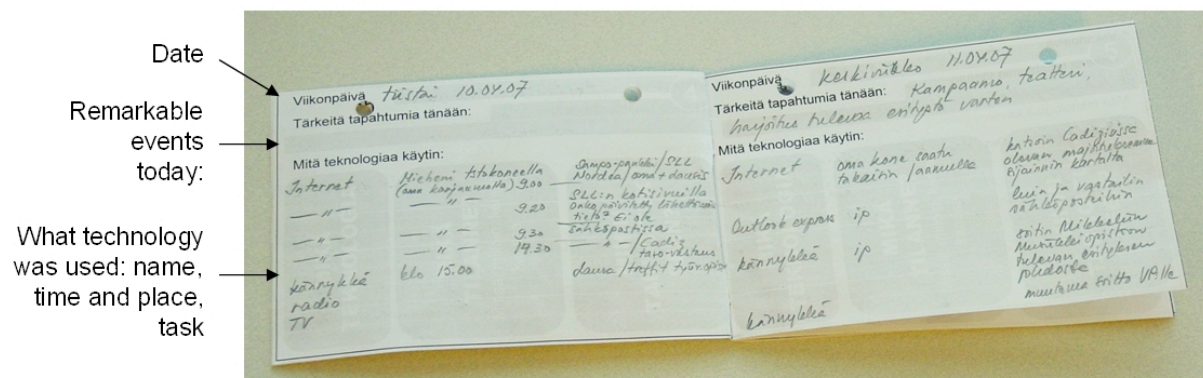

Figure 2. Two pages from a diary written by a Finnish participant.

3.1.2 Sociogram

The purpose of the sociogram was to find out about differences in communication between important persons in one's life. For instance, participants were expected to communicate differently with their relatives than with their (possibly former) work colleagues. Participants were instructed to draw a graph of the social networks and communication methods in use. The sociogram was also used to check the completeness of social information in the diary. It was possible that during one week of diary-keeping, not all of the relevant social contacts would be represented, in which case the sociogram would inform the interviewer about other important people. Figure 3 shows a sociogram that was collected from one Finnish participant.
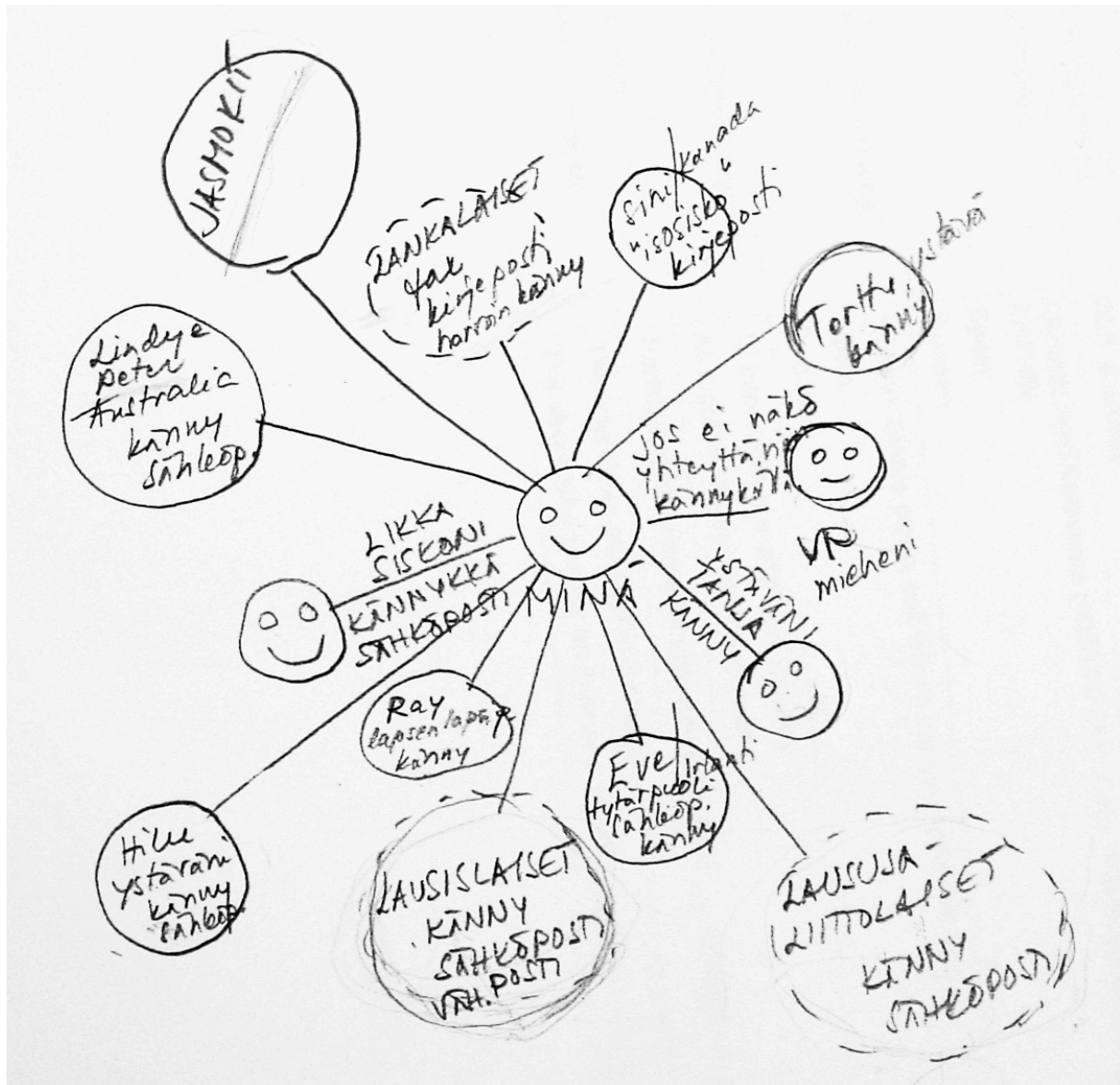
Figure 3. A sociogram drawn by a Finnish participant. The circles represent both individual people and groups, and the text written next to the connecting lines describes the primary communication media used.

3.1.3 Semi-structured interview

The purpose of the interview was to let participants explain the information provided in the diary and the sociogram, and also to reply to other important questions related to the research questions. To achieve this, the interview questions focused on collecting brief narratives on the life changes already experienced by the participants. Participants were also asked to describe the life changes they expected in the coming years, and in what ways (if any) they had prepared for them. They were also asked to muse on how they would change their lives if they had more money or less money at their disposal.

In most of the interviews, two researchers were present: one did the interviewing and the other took notes. This arrangement accelerated data analysis, because the interviews could be converted into full interview reports based on the hand-written notes. Since the interviews were also recorded, the full

interview transcripts were reviewed whenever a selected segment of an interview seemed particularly interesting or relevant.

3.2 Analysis

In terms of data analysis, the data was initially prepared separately by the authors in Finland and Sweden. The authors collected the answers from each participant to each of the interview questions, and prepared a list of the life changes mentioned in the interviews. The same procedure was also carried out to pre-process the data on technology use and social networks, as collected in the diary- and sociogram-related discussions.

After the preparation, the actual analysis was strongly data-driven. The data on life transitions and technology uses were analyzed qualitatively with the grounded theory approach (Glaser and Strauss, 1967) by grouping the data into thematic categories and iterating the category contents until all data from both countries were incorporated into the structure. This allowed us to focus on users' viewpoints before comparing the results with related research. In the following section, the findings from this analysis are presented and supplemented with examples from the data. While the interpretation of the findings in the following section is at summary level, the 'Discussion' section will provide more in-depth interpretations on coping with transitions and on how these transitions can be taken into account when developing technology.

4 Findings

The order of presentation of the findings follows the original research question structure, focusing first on what kinds of life transitions are experienced by people in late middle age, and then on the patterns of technology use and how the ICTs are related to the transitions. The findings are based on interviews in which transitions have already been interpreted by the interviewees. Therefore, we do not claim to describe transitions as they objectively occur but attempt to present matters of concern that came up in the interviews.

4.1 Life transitions

The data collected represent life transitions of the people in late middle age as the informants themselves have described and reflected on them. No noticeable country-specific differences were found in the data. Because of this and the similar socioeconomic and cultural profiles of Finland and Sweden, the findings are presented jointly for the two countries.

4.1.1 Areas of life affected by transitions

The transitions that participants were concerned with were those that directly affected them and their significant others. Although the transitions of the participants themselves were experienced differently than the transitions of their significant others, the areas of concern were very similar. Problems with health (e.g., possible diseases, accidents, and deaths) were mentioned, as were life-cycle events (ranging from births to deaths), changes in working life (e.g., getting a new position at work or becoming unemployed), and moving (to the countryside, the city, or a new country). Additional areas of life were retirement, changes in interaction patterns with the people in one's social network, changes in one's financial situation, and technological changes. These were seen as including challenges and transforming one's life, regardless of whether they happened to oneself or to others close to the participant. The degree of the effect varied from one participant to the next. None of those interviewed brought up changes in the political landscape, such as revolution, war, or natural catastrophes as triggering transitions in their lives. Table 3 presents the affected areas of life and gives examples from the data. The contents also reflect findings from related research. One task for future studies would be to substantiate the qualitative findings with quantitative data, asking questions such as how expectations and worries regarding transitions actually lead to changes in different life areas. This kind of data is not readily available for all affected life areas. It would have to be collected from different sources, and new primary data would also be required.

Table 3: Areas of life affected by transitions

Affected life areas	Oneself / social networks	Examples from the data
Health	maintaining/increasing health, sicknesses, accidents	*"When you're getting old, you start to suffer from different ailments."* *"My partner had a big life change when he fell at work and broke his leg."*
Life-cycle events	birth, confirmation, graduation, possibly getting married, possibly having children, possibly getting divorced, death	*"The birth of my child is still one of the most important events in my life."* *"My parents died. They had always kept me and my siblings together."*
Housing	moving to a new place, moving to a new city/country, building a house	*"I'm going to build a new house."* *"Moving within the country and between countries has affected my social networks, making them quite small."*
Work life	education, changes in work, having too much work, becoming unemployed	*"Who can replace me? There is no one I could trust to take over my work."* *"Of course, there is always the possibility of you losing your job"*
Retiring / being retired	having leisure time, traveling, performing hobbies, finding new work	*"We plan to travel a lot more once my wife retires, within a year, as well. We're looking for experiences."* *"I'd like to participate in a local theatre group."*
Amount of interaction with oneself/others	reducing, maintaining, expanding, or changing interaction with other people	*"When we get old, we're just not in contact that much anymore. When you're older, you use your time differently and you get lazier."* *"I'd like to expand my contacts and meet other people."*
Financial areas	pension, bankruptcy, selling acquired capital	*"There's not enough money to do everything."* *"I have to take care of banking and insurance."*
Technological areas	new technological devices (computers, the Internet, video communication, etc.), letting go old technologies (old phones, cars, etc.)	*"Getting a computer is a big challenge."* *"I'll stop working and having a car, and will move to the city."*

4.1.2 Dimensions of transitions

The transitions that the participants talked about can be grouped around many possible dimensions, which often overlap and are thus non-exclusive: *past–future, scheduled–non-scheduled, voluntary–involuntary, positive–negative, evitable–inevitable, controllable–uncontrollable*, and regarding the *impact of transitions* on one's or other people's lives. In detailing these dimensions, the aim is to

contribute to a more structured and holistic understanding of the nature of transitions in the life of 55–65-year-olds than previously presented.

Past transitions were those already experienced by the informants. They covered all of the affected life areas already mentioned. Life-cycle events that occurred a long time ago (such as graduation) were not mentioned, while getting married was a transition that still got attention in the interviews. Future transitions were those that the respondents expected to experience, and these also covered all affected life areas. This dimension shows that the informants had a linear conception of their lives, with a beginning and an end.

The dimension of scheduled and non-scheduled transitions denotes whether life changes can be expected to happen at a specific time (scheduled) or if they can arrive suddenly (non-scheduled). Scheduled transitions were tied to life-cycle events, such as birth, graduation, marriage, retirement, and death from natural causes. The non-scheduled events mentioned were serious illnesses, sudden changes in employment, accidents suffered by the person or his/her significant others, and sudden deaths within one's social network. People can generally prepare for a scheduled transition in advance, even though this may involve an entirely new experience for a person. Scheduled transitions are usually accompanied by rites of passage, which imply suggested coping strategies and help individuals adopt new roles in society, whether, for example, becoming a grandparent or mourning the loss of one's partner.

Some of the transitions experienced or awaited were seen as voluntary while others were involuntary. Transitions related to a loss were seen as happening involuntarily, such as getting divorced or losing a parent. As one of the participants stated, "My mother died three years ago and I still haven't got used to it," (female, 67, Finland). Voluntary changes, on the other hand, seemed to be connected to positive feelings, such as being in better physical condition after a life change. These were related to the participants actually doing something themselves, as expressed by one participant: "[I expect] to have more freedom to do whatever I want to do, such as visit museums, babysit my grandchildren, read more books, and visit our summer cottage—where we have an absolutely technology-free zone," (female, 61, Sweden). Voluntary transitions are interesting with regard to the coping strategies discussed later on, since by being voluntary they already imply an active approach.

Transitions can also be looked at in terms of the positive–negative dimension. Interestingly, events could be perceived as being either negative or positive, depending on context. Non-scheduled life-cycle events, such as getting divorced or being forced to retire, were in some cases initially described as negative experiences but deemed positive transitions in the long run. Mixed feelings within different life areas, in turn, could be related to tensions between one's financial situation and the quality of one's social relationships: "When I moved from Lappeenranta [a town in eastern Finland] to the capital area of Helsinki [to work there after being fired], I had to leave many friends. In Helsinki, I did not have the energy to construct a new social network that could have compensated for the one I had lost," (female, 62, Finland). Although these were not mentioned in the interviews, such transitions can be an important class of life changes. All in all, transitions that create mixed feelings or that have different effects in different areas of life may foreground collisions in one's life interests. We will return to this possibility in the 'Discussion' section.

Transitions were also seen to range from evitable to inevitable, partly depending on the transition concerned and on the person answering the questions. One of the participants explained it quite clearly: "There are two kinds of changes: those that you can influence and those you can't. Those you can't influence you just have to accept. And those you can influence depend solely on you. Maybe IT or other devices could be of help in coping with them," (male, 70, Finland). Another informant was rather fatalistic: "I haven't paid much attention to them [life changes]; I have just thought about them as different life situations that you have to learn to deal with," (male, 55, Finland).

Interestingly, some transitions were both inevitable and evitable, meaning that they were about to happen but one still had the possibility to influence how much they would affect one's life. In particular, retirement and health-related issues were brought up as being "something you can work on." Thus, deteriorating health was on the one hand seen as inevitable, and a part of future transitions,

but on the other hand it encouraged active efforts to minimize its impact. One informant told us, "As long as I am healthy, I'm happy. My health may, however, deteriorate in the future. My wife and I have thought about getting a woodcutting machine for our cottage, so we'll have one if one day we are not fit enough [to chop the wood]," (male, 65, Finland).

Closely related to the aforementioned dimension of inevitability are transitions that are controllable or uncontrollable. For some participants, maintaining a high level of control was extremely important: "I have made all the preparations. I have worked until my pensionable age, just as I had planned. I have also addressed the issue of who will replace me in my work group. It was decided at the last minute," (male, 65, Sweden). Other participants stated that it is impossible to maintain ultimate control over one's life; for example, one said, "It's hard to prepare for changes beforehand […]. I generally don't make many plans for my future," (male, 60, Finland). The need for being in control was more dependent on the participants' personal preferences than on circumstances in a specific life area. Research suggests that an internal locus of control—that is, a sense of control of one's life—is central to physical and psychological well-being (see, e.g., Lachman et al., 1994; Antonucci, 2001). Well-being also seemed to be tied to the ability to let some things develop on their own. "I'll let life become whatever it becomes," (female, 63, Sweden), as one of the participants put it.

The late middle-agers of the study had also learned from other people about possible future life changes and the outcomes that might come their way. "Deaths have changed my life and that of many others. For example, a former colleague of mine died of cancer. That has made me afraid of cancer. What if I get sick as well?" (male, 61, Finland). Depending on the type of information, this might change an informant's perceptions of what the future might look like, and teach him or her new ways to be prepared for the unexpected. Such coping strategies will be discussed after a description is provided of the participants' attitudes towards technology and how they use technology.

4.2 Information and communication technologies: attitudes and use

Digital electronic devices such as personal computers, cellular phones, digital pocket cameras, MP3 players, and instruments that make use of the global positioning system (GPS) have become prevalent in the developed countries. They enable automation, have capabilities to store and use large volumes of data, provide advanced means of communication, and support the use of different modalities, and, in this way, they change our embodied interactional environments (cf. Seipel, 2002, p. 21–23). Although humans have, according to current historical knowledge, always been toolmakers (Buchanan, 2008), digital electronic devices are relatively new, and the ones promoted by the leisure industry are directed often towards teenagers and younger adults. Late middle-age users are not 'digital natives,' meaning that they were born before the invention of these newer technologies. They seem to adopt many electronic devices later than the so-called early adopters. Nevertheless, newer technologies are often used in order to perform tasks that late middle-agers handle with other suitable equipment, such as listening to music on an old radio instead of the newest MP3 player.

The immediate finding of the study is that digital electronic devices are integrated (or domesticated— see Silverstone et al., 1992) into the everyday life of people in late middle age. This can be exemplified by the way different electronic devices were listed in the diaries and mentioned in the interviews. All of the participants in Finland had a cell phone, and all used a personal computer, whether at work, at a public library, or at home (only four participants out of 12 actually owned a PC or a laptop). All but one of the participants used the Internet. The PC and the Internet were used by most participants daily or at least 3–4 times a week. Other digital electronic devices were not as common, though some of the participants did own DVD players, digital pocket cameras, portable CD players, MP3 players, video cameras, personal digital assistants, and GPS devices.

The diary data showed that participants used ICT for communication with very different social spheres. Many participants talked daily with specific friends and relatives. Some of these calls involved people of the same age who were going through difficult times. On the other hand, if the calls were to one's children, they were a lot more cheerful. In addition to phone calls, many of the

participants maintained other kinds of social activity with different interest groups such as birdwatchers, astronomers, or a theatre group.

The personal computer and the cellular phone were often mentioned as the most useful of the devices. Interestingly, for some participants the computer had become a natural tool to use in recreational projects and to collaborate with others in hobby-related activities. Computers were used to keep the participants' 'data sorted' to make writing letters and notes easier, for connecting to the Internet in order to search for information, make reservations, to learn and stay up-to-date about topics of interest, and for e-mail. Cell phones had made the participants less restricted to specific times for contacting others and thus had made it easier for them to keep in touch with their social networks. The use of ICT for recreational projects warrants a further study. Since personal projects are important in alleviating the problems that appear around the time of retirement (Luborsky, 1994), understanding the potentially increasing importance of computers in such activities would be important.

Regarding attitudes towards technology, ICT in general was of different interest to different users. Expert users, with a positive attitude towards its possibilities, knew how to code and script their own applications and were very imaginative in finding uses for technology. They responded proactively to changes in the surrounding technical infrastructure, trying to modify it to fit their needs better.

Others had frustrating experiences with new digital electronic devices, but these were rather singular examples, such as a participant who disliked receiving 'funny' messages via e-mail or another who did not know how to maintain her computer and had to seek help from others who did not behave respectfully towards the person seeking advice. Also, functionality issues such as having too many features in one device were criticized. For a similar list of problems, see the work of Kurniawan (2008).

Overall, the participants portrayed a very pragmatic attitude towards electronic devices. As also stated by Aula (2005) and Rogers et al. (1998), the willingness to learn to use technology depends on its usefulness. For instance, flaws in a gadget were tolerated if the device was still perceived as useful: "My attitude is that all devices are good! I try to play with the hand I'm dealt. If a device serves its purpose, I learn to live with it," (male, 55, Finland). Along a similar vein and with a focus on practicality, most of the participants were not looking for the latest devices but relied on the simple models. One put it this way: "I'm happy with the easy versions: even a Nokia 1100 demands too much from me. When it comes to using a digital converter to receive a TV signal, I only learn what is necessary," (female, 62, Finland).

With these findings, it seems justified to conclude that the practice of domesticating new technology —acquiring new kinds of ICT products and learning to use them for different purposes and make them part of one's life—had become the stuff of everyday life for these late middle-aged people.

4.3 The role of ICT in transitions

Digital electronic devices play two roles in transitions. On one hand, they aid in coping with the transitions experienced, by making it easier to retrieve information (e.g., via the Internet), to maintain and extend social networks (e.g., through cell phones and e-mail), and to maintain a feeling of actually being 'connected to the world' (by being contactable, and having the ability to do the contacting oneself). At the same time, digital electronic devices themselves are important triggers for transitions. The introduction of new ICT into workplaces has had profound effects on the ways in which the late middle-agers have started to organize and carry out their work. In addition, the use of new ICT elements among other important individuals in one's social network (including children, grandchildren, other relatives, and friends) has forced many of the people in late middle age to adopt technologies that they otherwise could have disregarded without peer pressure. Declining to use technologies could have triggered unwanted transitions in one's social life.

In the interviews, the participants spoke on many occasions about how they make use of ICT to cope with transitions. Given the heterogeneity of the people interviewed, we did not notice clear differences in the responses between retired participants and those still in working life, probably because the retired interviewees had already become accustomed to using ICT at work (see also Haddon, 2004, p.

128). With reference to planned scheduled transitions, the Internet was mentioned particularly often, such as in relation to learning about opportunities to spend more time traveling or in the countryside, but also for planning and preparing for the future well in advance:

> "I need to search for information about illnesses and related information on Internet," (female, 61, Sweden).

> "[I would need] security and surveillance services that could be controlled from a cell phone and over a distance. In contact with a security company that can go and find out about hooligans!" (male, 65, Sweden).

> "In the end, five hundred kilometers is not so far, because you have different devices on hand, such as a car and communication equipment. I need communication in the transitions of my life." (female, 55, Finland).

Cellular phones and e-mail had become important communication tools for arranging face-to-face meetings as the participants noticed increasing challenges in arranging to see each other in person:

> "E-mail has enabled us to keep in touch especially with friends over distances. It has made it possible to arrange meetings between cousins every year, with about 20 people in total," (male, 65, Finland).

> "I'm happy with the communication within my social network. I only wish they persevered to keep it that way. I'm one of the youngest in our group, and that's why I hope that getting older does not start to affect my friends and lessen their interest in staying in touch," (male, 61, Finland).

> "I want to keep the contacts active in my network […]. I wish to remain visible and important to others in the future when my life changes," (male, 60, Sweden).

Upon noticing how their social networks were changing, participants started to adapt their preferred communication methods to other people's communication practices. After one interview in Sweden, the participant said that the next activity he would perform is to use the Internet to talk with his father and his daughter together. Another participant, in Finland, stated that she had started to stay in touch with her children through Skype, an instant messenger, and a cellular phone.

ICTs were integrated into the lives of the people in late middle age processually. At one point, a specific device could be a trigger for a transition, such as if a person had to learn to use a PC to keep up with other people's changing communication practices. Later, the same device could be used in order to cope with another transition, that is, using a computer to search for information. As suggested in research on domestication (e.g., Silverstone et al., 1992), as well as on diffusion of innovations (e.g., Rogers 2003), the integration of ICTs into everyday life is a process that consists of various parts. Effort is required before one even acquires a novel ICT. Rogers (2003) suggests that this process consists of three parts that he has termed knowledge, persuasion and decision. Knowledge is used when a person becomes aware of a specific ICT and tries to understand how it works. Persuasion is used again to form an attitude toward the ICT in question, before the decision stage, when opting to adopt or reject a specific ICT. During the process, she has to imagine what kind of role the innovation will acquire in her life and possibly discuss its pros and cons with experts and significant others. After the acquisition, the product must find its place in one's work or domestic practice, where other people (colleagues and family) will also use it. This leads to negotiations of the product's appropriate usage and its fit to the existing practices. Rogers calls these stages implementation and confirmation, where an innovation is first put to use and later the acquisition is evaluated. In the long term, ICTs have 'careers' in the personal lives of users that change over time. For instance, a shared PC, cell phone, or digital camera may become someone's personal possession. At some point, the product may be abandoned, because of breakage, the appearance of better products, the fact that it is no longer useful for maintaining one's social status, etc. (ibid.). Thus ICTs may trigger transitions, help people cope with transitions, or be used for both purposes at different points in time.

5. Discussion

The findings show that late middle-agers experience a broad array of transitions and that ICTs are already an integral part of their daily lives, a source of both frustrations and positive experiences. When we were going through the findings regarding future transitions, a variety of life interests were found to be conflictive or incommensurable, sometimes sparking frustration in terms of one's daily life. This forms the main point for interpreting the findings. The *colliding life interests*, as described in more detail below, are closely tied to people's behavioral coping strategies, with which they try to mitigate such conflicts. They can be seen to reflect tendencies towards living in individualized networks in modern societies. After addressing this potential explanation for the collisions, the paper presents two design implications based on colliding life interests.

5.1 Colliding life interests

The findings from Finland and Sweden show that the people in late middle age tend to be very conscious of their future retirement, as well as of the fact that they have retired. Retirement often makes daily activities less structured, erasing many of the routines in which people have learned how to get things done. In the course of a working career, many daily routines are temporally and spatially structured, including waking up at home at a specific time of day, having breakfast, going to work, meeting colleagues, answering e-mail, etc. Retiring opens new ways of seeing oneself and one's social roles. During one's working career, these are restricted due to a lack of time to experiment with new ways of being. After retiring, the participants of the study wanted to travel more, spend more time with their relatives (especially grandchildren), possibly move to another town or to the countryside, spend more time at their summer cottages (or similar places), sail, start new hobbies, or just see what happens. These colliding interests are often not perceived as problematic, but they may conflict with each other when they are not dealt with appropriately. The handling of such conflicts permeates much of what the participants said in the interviews. The concept of colliding interests is an analytic interpretation of the dynamics of life in late middle age, and was not mentioned explicitly by the participants. Nevertheless, in many interviews, the tension between different life interests was apparent, such as in the following comments regarding retaining existing social networks and changing where one lives:

> "The challenge for me is how I'll be able to leave my children here [in the capital area] if we move farther away […]. Our children and their well-being are the most important issues to consider when making these changes. There is also my husband's mother, who is over 80 years old, and we're thinking about how she could move in with us. Family is important to me. My sister's move affects our moving as well, since she may decide to live in the same area," (female, 55, Finland).

> "When someone moves, this in itself is a big change, similar to retiring, and a lot of information is needed. In my case, the medical services have undergone a complete overhaul. I should know how to act in different situations and whom I should contact […]. Lappeenranta [a town in Eastern Finland where the participant used to live] is so far away that you can't totally return to those circles. Old relationships had to drop away to make space for new ones," (female, 62, Finland).

Another collision of interests can be seen between retiring and maintaining societal responsibility:

> "What will happen with my company when I want to stop working? There were 30 of us employed here when I took over my father's company. We are now three, and my daughter is working half-time," (male, 60, Sweden).

Naturally, there are life interest collisions in practically all stages of life. When examining the classification of different life areas affected by transitions in late midlife (Table 3) and quotes like the ones above, a few things distinguish the life interests in this life stage. It was apparent in the interviews that retirement—upcoming, ongoing, or recently occurring—had brought about much reflection and deliberation on life's future direction. For many, this was the first time in many years when questions related to life choices became evident and required resolution. Therefore, to different

extents, the participants were forced to make decisions. On the other hand, this life stage also gave them a suitable opportunity to do so, albeit with some limitations, often related to the people important to them. For the participants, this caused varying levels of concern and the need to rethink their values with respect to personal interests, as is evident in the quotes above. The data from this study suggest that the collisions arise as a result of changes in the relatively stable structures of social relationships, things required for making a living, and the use of time in general.

Acting on these interests necessarily restructures the lives of late middle-agers. While many interests can be addressed by merely dedicating a certain amount of time to each of them, in other cases a person may face the need to choose from among a more thorough restructuring of living life, giving up some interests, or choosing one course of life over another. The deliberation related to such decisions is apparent in the above quote "[…] the challenge for me is how I will be able to leave my children here if we move farther away […]."

One case of colliding interests that requires management work is the wish to spend a lot of time traveling and possibly also at a summer cottage while also wishing to socialize with close relatives and friends. Moving far away from one's old habitat makes a variety of devices necessary if one wants to retain previous social networks: cell phones, e-mail connections, social networking sites, etc. aid in keeping up relations in one's network. Another example of colliding interests noticed in the interviews is the interest in living a simpler and more peaceful life while wanting to be socially active and start new hobbies and activities. A third example was deliberation between interest in pursuing an active career, aligning one's retirement with that of one's spouse, or engaging in new activities and the need to keep in mind the changes in the household's economic situation. These dilemmas are in many cases non-critical in that all paths of action promise positive changes and no immediate decisions are required. However, they are a source for contemplation since sooner or later a decision must be made.

Naturally, different life interests are not always in conflict with one other. Nonetheless, they are sources for possibly unsuccessful transitions. Therefore, they need to be coped with, and the research shows that some of the people in late middle age are able to create more successful coping strategies than others.

5.2 Active behavioral coping strategies

The data showed that participants tended to have very different ways of orienting themselves towards transitions. Whereas some took a lot of initiative, actively seeking ways to improve their current situation, others just went with the flow and did not think so much about their transitions before they occurred.

The literature on individuals' coping strategies refers to the specific efforts, both behavioral and psychological, that people employ to master, tolerate, reduce, or minimize stressful events (Carver et al., 1989). Active coping strategies are behavioral or psychological responses designed to change the nature of the stress factor itself or how one thinks about it, whereas coping strategies aimed at avoiding the issue led people to activities or mentalities that keep them from directly addressing these events. Generally speaking, active coping strategies, whether behavioral or emotional, are thought to be better ways to deal with stressful events than avoidant coping strategies (Holahan and Moos, 1987; see also discussions on locus of control and self-efficacy in Lachman et al., 1994). From the research by Carver et al. (1989), the findings of this study can be related to the following kinds of previously identified active coping strategies: 1) active behavioral coping (taking action or exerting efforts to remove or circumvent the stressful event, here transition), 2) planning (thinking about how to confront the transition, and planning one's active coping efforts), and 3) positive reinterpretation and growth (making the best of the situation by growing from it or viewing it in a more favorable light). People often use a combination of these coping strategies to handle a situation.

The findings suggest that digital electronic devices may help one to cope actively with upcoming transitions, being a part of complex processes of change with which everyday citizens have to cope. In order for the people in late middle age to be able to use new ICTs for personal gain, they need to have a clear idea of the possible advantages that these devices can offer them. Additionally, they have to

apply active behavioral coping strategies—taking situations into their own hands—in order to be able to gain from (often quite complex) ICT infrastructures.

Although this study did not actually follow the people in late middle age longitudinally through their transitions, the interviews provide examples of both of the aforementioned coping strategies: avoidant and active behavioral ones. The participants who had positive attitudes toward ICTs tended to engage rather actively with transitions and thus took more active roles in their own lives, whereas negative attitudes towards ICTs were often paired with neutral or avoidant coping strategies. These findings are in line with the literature from research on coping strategies and locus of control. What is important is that many people try to find some ways of coping and that the current solutions already known include technology-based ones. In Subsection 5.4, we present some design guidelines that support self-efficacy in order to achieve active behavioral coping.

5.3 Coping with colliding life interests in individualized networks

The transitions observed and the ways of coping with them relate to analyses stressing the importance of individually networked action in contemporary Western societies. The concept of individualized networks, as developed in social network analysis, suggests that individualization occurs in tandem with increasing means for being in touch with various personal networks (Kennedy & Wellman 2007; Wellman 2007). Communication media in households such as mobile phones, e-mail applications and television programs are in many cases used individually and not necessarily together with other people sharing the same space. This does not mean that media use would have led to isolation, since research shows that interesting issues are still discussed in personal networks, both at home and outside of it. In fact, many media technologies help people form and maintain several social networks that are not as locally bounded as they used to be.

A shift to individualized networks does not mean that all old social relationships will disappear or be replaced with new ones but, rather, that there is a transformation with regards to how people are able to connect to various social networks. The ability to personally connect to various networks, using mobile phones and Internet applications, helps people to bridge weak ties (Granovetter 1983) and learn about other ways of living.

Life interests seem to collide when individuals must choose among the possibilities that appear through one's personal network. Late middle-agers might dream of spending a year traveling with their spouses in foreign countries; dedicating themselves wholeheartedly to a new hobby, thus meeting new people, and wanting to spend their time with their grandchildren. All of the people involved are part of an individual's social network, but they usually belong to different categories of social relationships.

Individualized networks seem to offer insight into the colliding interests in our data. The colliding interests described by those interviewed, such as the tension between retaining existing social networks and moving to a new area after retirement, are related to greater personal choice and the question of managing and constructing a good life. But as has been seen, the idea of a good life again seems to include incongruent interests with which people in late middle age have to cope. Socioeconomic factors seem to play an important role in determining the possibilities for taking full advantage of individualized networks: without money for mobile phones and fast Internet connections, individual mobility paired with active ICT-based communication might be hard to maintain.

Since some transitions are hard to predict, and coping with them through active behavioral strategies seems to help keep late middle-agers from adopting negative attitudes towards transitions, the tendencies towards individualized networks and coping with transitions seem to support each other. Coping actively with transitions helps people figure out how they want to live life in the future, facilitating the creation of multiple conceptions of one's self (see Kloep and Hendry, 2001). In actively creating multiple conceptions of who one wants to be in the future, the people in late middle age similarly reinvent new ways of being and living. ICTs may contribute to this by supporting late middle-agers in living out distinct, possibly conflicting roles and by enabling mutual contact among socially relevant peers who do not share the same space. Thus ICTs may facilitate role-switching being a good parent, grandparent, sibling, cousin, and friend and finding oneself anew.

The struggle in terms of balancing different selves is of course not specific to late middle-aged people, but the different overlapping life changes – for example, retirement and the changes in social and family relationships – do make it unique. In a way, such an individual might view himself or herself differently and also become different in the eyes of others. Due to transitions such as retirement, one needs to start maintaining personal and social identities in a new way. ICTs can provide vital tools for creating, presenting and controlling one's life in the midst of various transitions.

The ability to facilitate role switching via ICT is closely tied to mobile applications, or ICT solutions that are readily accessible while one is mobile, such as laptops, smart phones, and the like. It is also possible to notice a dialectic here between pursuing an active mobile lifestyle on the one hand and staying physically near one's social networks on the other and, accordingly, being seen as a responsible older adult in view of more traditional ideals.

5.4. Technology implications

Health-related technologies such as wristcare monitors and hearing aids are probably the most typical examples of new technologies that target older people. While the awareness of the need to pay attention to one's health was discussed in every interview in the study, and assisting technologies were indeed mentioned a few times, it also became clear that in most cases, these topics did not yet play a significant role in the participants' lives. Those we interviewed were in good mental and physical condition and in many cases had plans to extend their life spheres in new ways. When addressing technology implications, we therefore find it justified to speak about more than just hearing aids, heart-rate monitors, and other devices that have been developed to help people cope with their age-related health problems.

As suggested above, technologies for late middle-agers are probably most helpful if they are able to engage users in managing their colliding life interests through active behavioral coping strategies and role-switching, and if they can support such strategies in the long run. Godfrey and Johnson (2009) suggest that technology-literate late middle-aged persons could act as active mediators in their communities, establishing digital circles of support. Such circles would bring together social and health workers, relatives, friends, neighbors, etc. in a new way, increasing people's sense of control by strengthening their social relations (cf. Antonucci, 2001). In the discussion below, we want to go beyond the idea of an individual who provides support for others and also explore how the individual can appropriate ICTs more symmetrically for his or her personal interests and for participating in social activities. Two life areas and related colliding life interests are briefly discussed, both of which are related to issues repeatedly mentioned in the interviews: coping with new daily rhythms after retirement and keeping in touch with other people.

5.4.1 Renewing and supporting daily rhythms

As noted, through the increase in free time, retirement causes a drastic change in how a person can spend his or her day. For many of the participants, although also eagerly awaited, this change was also a source of stress. Over the decades, work had given these people both a structuring temporal frame for daily and weekly living as well as adding a sense of meaning to daily activities. Having more relaxed temporal constraints to structure the day, some of the participants struggled to find a new structure and meaning for spending their days. In extreme cases, some even expressed a wish to continue an achievement-oriented lifestyle in which each day would be represented as a set of projects that could be addressed and accomplished in a freeform, relaxed order:

> "My daily rhythm changed because of retirement, but I also got more time for myself. At first it took some time to get used to it. What's interesting is that I feel as busy as ever! Getting everything done probably just takes more time than before," (male, 70, Finland).

Such commitment to a work-like lifestyle might be extreme, but, in a more relaxed form, spending days engaging in different projects (trips and visits, hobbies, working for charitable and other organizations, gardening, refurbishing one's house or summer cottage, etc.) was very common among

the participants and has also been presented in previous research (Kloep and Hendry, 2001; Luborsky, 1994; Price, 2003).

As was mentioned in connection with the diary data findings, many of the participants maintained active communication involving different social groups and activities. In contrast to the idea of digital circles of support (Godfrey and Johnson, 2009)—a suggestion to support arenas for technology-literate late middle age community members to support others—the findings of this paper also point to more symmetric relationships—both direct and ICT-mediated—between group members. Typical groups were friends, members of hobby groups, and relatives belonging to different generations. The topics and activities consisted of planning social events, communicating about topics of joint interest (e.g., bird watching), and exchanging news on what is going on in one's life and that of others. Most of this interaction was technologically mediated. In this context, ICTs supported the participants' maintenance of different social identities in various communities and social circles.

Technology for late middle-agers could support orderliness in the face of social responsibilities and personal interests. It could allow the user more control over his or her commitment to each peer group, avoiding situations with too much or too little activity. This also includes support for maintaining different 'faces' towards these various communities.

5.4.2 Maintaining and renewing social contacts when moving to a new home

The years between 55 and 65 are a time of active change in where people live (Banks et al., 2006; Litwak and Longino, 1987; Robison and Moen, 2000; Silverstein, 1995). This may result both from inevitable changes in life (e.g., economic status after retirement or children moving out to live on their own) and from hedonistic factors (e.g., wishes to lead a more peaceful life). Moving to a new area, however, may change the nature of one's social relationships considerably. Meeting old friends face to face often becomes more difficult, and it may be difficult to get to know people in the new neighborhood. Unless the new location is very close to the old one, or the person is willing and able to travel to meet old friends, one's common hobbies, such as ballroom dancing, going for a cup of coffee, and playing cards—the most common social activities in Finland in this age group, according to Statistics Finland (2005)—have to be renegotiated, rearranged, or reconsidered.

If the colliding interests become a problem, the solution needs to address two questions: how the person affected can establish contacts with new people and how contact with existing circles could be maintained. People in this age group (at least in the Nordic countries) are experienced Internet and cell phone users but have a preference for face-to-face communication. Technology therefore needs to fill the gaps when people cannot meet physically and should make it easier to agree on future meetings. Popular methods of using ICTs (phone calls, text messages, and e-mail) support a good deal of this but fail to enhance lightweight awareness of others—the kind of social interaction that does not require commitment to communication. Among younger generations, this activity is currently managed by means such as instant messaging, blogs, and websites such as Facebook. The slightly exhibitionist and superficial (cf. Lindley et al., 2009) nature of using such systems is one of the reasons some older users report that they find them discouraging (Lehtinen et al., 2009), so a different approach is preferred.

An alternative approach also related to changes in one's place of residence is to focus on hobbies and common interests in which one can partake virtually anywhere. As an example, sites for hobbies such as ballroom dancing and card-playing can be found in almost any town or city. If suitably designed, ICTs support people in finding and establishing contacts with such sites in a new place as well as staying in touch with their past hobby circles. Almost any hobby can have web-based support that allows people to interact when they cannot meet face to face. In some cases, frequent face-to-face interaction is not even necessary. For example, jogging-related websites[2] allow people to define jogging routes and compare their running times with each other in an encouraging spirit. In addition,

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[2] See, e.g., http://www.runningahead.com/ (last accessed on 17 December 2009).

such websites also enable users to extend open invitations to other people living in the area to jog together. This kind of local gathering around a hobby may work with other hobbies too. Interaction through a hobby provides a starting point for social interaction.

6. Conclusions

The purpose of this study has been to investigate people around 55 to 65 years of age—an ICT user segment that previously has not been the focus of many studies, in spite of the interesting life circumstances that distinguish them from the rest of the society. The focus has been on life transitions that are common at that age: retirement, changes in economic situation and the structure of social networks, and the changes in one's role in networks of friends and relatives.

What our study on late middle-agers in Finland and Sweden highlighted is the willingness to take up and learn to use new technologies if there is a perceived practical need for them in everyday life. Another finding was related to the dynamic interplay between different life interests that a person starts to pursue when entering the life stage of late midlife. These life interests may lead to conflicts in which the people in late middle age have to make 'either–or' decisions between spending time with a social network and pursuing individual aspirations. Examples of such decisions involve changes in the rhythm of everyday life, pursuing new or renewed hobbies, traveling, maintaining social relationships, and choosing where to live.

Among other possible solutions, the management of interests and collisions can be made easier with technology, but not with simplistic solutions that only address one part of the picture. Technology should not be seen as the solution to these collisions, and it should be borne in mind that it might itself bring about both transitions and collisions. This paper has advocated supporting active behavioral coping strategies that enable alternative paths or strategies of action for resolving the conflicts. This idea, while rather general in nature, has been concretized in the context of two possible cases of colliding life interests.

This work has been able to provide just one viewpoint on conceptualizing the emerging design space for people getting used to late midlife. The statistical profile provided in this paper shows that this age group is very strong as a potential user base for new information technologies. In terms of future research, there are many opportunities for innovative studies on the development of services and applications that may help people in this group to live more satisfying lives at this interesting life stage.

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